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# LETTER REPORT
# FOR
# FORMER ARCO REFINERY AND CHEMICAL RESEARCH FACILITY
# HARVEY, COOK COUNTY, ILLINOIS

**Prepared for**

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
Region V Emergency Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604

**Prepared by**

**Weston Solutions, Inc.**
3 First National Plaza
70 West Madison Street, Suite 1990
Chicago, Illinois 60602

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|---|---|
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| START Project Manager | Ronald Bugg |
| Telephone No. | (312) 424-3305 |
| U.S. EPA On-Scene Coordinator | Brad Benning |

Weston Solutions, Inc.
3 First National Plaza, Suite 1990
70 W. Madison Street
Chicago, IL 60602-4206
312-424-3300 • Fax 312-424-3330
www.westonsolutions.com

03 January 2003

Ms. Gail Nabasny, START Project Officer
United States Environmental Protection Agency
Emergency Response Branch
77 West Jackson Boulevard, SE-5J
Chicago, Illinois 60604

TDD No.: S05-0204-007
DCN: 249-2A-ACQE
Work Order No.: 12634.001.001.0249

Subject: Site Assessment Letter Report, Draft
Former ARCO Refinery and Chemical Research Facility
210 147th Street
Harvey, Cook County, Illinois

Dear Ms. Nabasny:

The Weston Solutions, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START) was tasked by United States Environmental Protection Agency (U.S. EPA) On-Scene Coordinator (OSC) Brad Benning to conduct a site assessment survey associated with potentially friable asbestos throughout the former ARCO Research Laboratory site located in Harvey, Cook County, Illinois, under Technical Direction Document (TDD) S05-0204-007. The analysis of the samples collected during the asbestos survey was conducted under TDD No. S05-0204-008. This letter report documents activities related to the asbestos survey conducted on 23 April 2002.

## INTRODUCTION AND SITE HISTORY

The Former ARCO Research Facility located at 210 147th Street, Harvey, Cook County, Illinois. The facility was once a research laboratory for oil and gasoline blending. The site is located in a mixed commercial and residential area. The western boundary of the site parallels the Illinois Central Railroad and Metra Electric commuter Rail Line. North of the property is 147th Street and directly east of the site is Field Elementary School (See Figure 1). The property is currently owned by Cook County through delinquent taxes.

The main building on site has been vacant since the late 1980's. In the past, portions of site buildings had been leased out and used as production facilities for lignosulfonate and iron oxide pigments. These production activities have been discontinued. At the time of the assessment, there was one active portion of the property. A used car auction facility was occupying the west parking lot and a small garage area on site.

Prior assessments and removal action had been conducted at the facility by the U.S. EPA in 1998. The CERCLA removal was activated for the purpose of eliminating radioactive material from the site. Radioactive material had been located in the radiation laboratory building and approximately 150 55-gallon steel drums that were located throughout the property.

## SITE DESCRIPTION

On 23 April 2002, START members Ron Bugg, Heather Schichtel, and Dave Wojcik met with OSC Benning to conduct a asbestos survey of the facility and the surrounding property. The survey team was lead by Mr. Wojcik, a WESTON Asbestos Inspector who was trained according to the U.S. EPA Asbestos Hazard Emergency Response Act (AHERA) and currently licensed in the State of Illinois to perform asbestos building inspections. Site work began with a general survey of the facility and surroundings and marking of potential sampling locations.

The main building area of the site was not fenced in, but the remaining area of the site was fenced in and locked. Open, deteriorating drums of waste products and unknowns, possibly waste oil, were improperly staged on site and exposed to weather and elements.

Evidence of vandalism on site was extensive. The main building consisted of three stories of offices, laboratory areas, storage areas, boiler rooms and a dinning area that contained a kitchen. All entrances to the main building and most of the windows were unlocked and had been vandalized. Vandalism on the main floor included areas in the hallways and several rooms where fires had been set. The second floor of the main building consisted of laboratories and additional office space which had been vandalized. Office spaces and meeting rooms occupied the third floor where windows and parts of the exterior walls had been removed by vandals. In general, the interior surfaces of the main building were extensively damaged by what appeared to be the removal of recyclable material from the facility. Insulation and debris were scattered on floors throughout the building.

During site work, START identified a sub-grade structure that was beneath the fan rooms on the north side of the main building. START was unable to distinguish the exact nature of the structure because it was filled with water, but it appeared to be a basement or a tunnel composed of poured concrete. The total depth of the structure was estimated to be 8 feet; the water level inside the structure was estimated to be 7 feet. Piping was visible beneath the water's surface along the north side of the structure.

In addition to inspecting the main building, START also inspected the pilot plant and the fenced-in utility trench between the main building and the pilot plant. The trench was approximately 5-feet deep and contained exposed pipes and standing water. Originally, a metal grate had covered the trench, however the grate had been removed and the majority of the trench was filled in with dirt and capped with bricks. A portion of the trench that was adjacent to the pilot plant was accessible at the time of the inspection.

## SAMPLING OF SACM

The site survey and assessment were performed in order to identify asbestos inside buildings and on equipment at the site. START surveyed the following buildings and areas for suspected asbestos containing materials (SACM):

- all floors of the main building except for the basement,
- the pilot plant,
- the radiation building, and
- the utility trench between buildings.

Significant damage to SACM was observed on site. Materials selected for sampling were among those that were damaged. In addition, soil samples were collected at a school on the adjacent property to the east of the site in order to determine if asbestos had migrated off site. A total of 39 samples were collected during the investigation; 36 were material samples from the site and three were soil samples from the adjacent school property. Table 1 lists the samples that were collected during the assessment and the type of material that was sampled. Sampling locations are summarized below:

- Samples ASB-1 through ASB-3 were collected from two old incinerators, approximately 4'x4'x4' in size, that were located near the fence in the northwest corner of the property.
- Samples ASB-4 was collected from the floor of the pilot building.

- Samples ASB-5 and ASB-6 were collected from the exposed pipe insulation from the trench on the north side of the pilot building.
- Sample ASB-7 was collected from inside the radiation building.
- Samples ASB-8 through ASB-28 were collected from the first floor of the main building.
- Samples ASB-29 through ASB-34 and ASB-36 were collected from the second floor of the main building.
- Sample ASB-35 was collected from the third floor of the main building.

Samples for bulk asbestos analysis were shipped overnight to STATS Analysis Corporation (STATS) in Chicago, Illinois for analysis. STATS is accredited by the National Institute of Standards and Technologies (NIST) National Voluntary Laboratory Accreditation Program (Laboratory Code.101160).

## ANALYSIS PLAN

START attempted to follow the EPA 3-5-7 rule for sample collection, however in some instances less samples were collected. The variance in sample collection was based upon inspector knowledge and visual assessment of the material.

All bulk samples were collected in accordance with the EPA AHERA, with the exception previously noted. The bulk samples were analyzed using polarized light microscopy with dispersion staining (PLM/DS) in accordance with the EPA "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020). This method identifies the asbestos type present in a material and quantifies the percentage of asbestos in the sample. The detection limit for this analysis is <1%.

## SURVEY RESULTS

The type and quantity of asbestos found in each sample and a determination of whether or not the sample was friable are presented in Table 1. Amosite and Chrysotile fibers were detected in these samples at concentrations ranging from 5-15 % and 1-30%, respectively. Based on the analytical results presented in Table 1, asbestos was distributed on site in the following manner:

- Amosite asbestos fibers were found in pipe insulation in the pilot plant.
- Chrysotile asbestos fibers were found in fire proofing, door and pipe insulation, pressed paper and floor tile materials in the main building.
- Amosite and chrysotile asbestos fibers were found in the pipe and duct insulation and ceiling paper materials in the main building.
- No asbestos was found in the radiation building.
- No asbestos was found in the incinerators that were in the northwest corner of the site.

The materials that were found to contain asbestos can be divided into three types: surfacing material, thermal system insulation, and miscellaneous materials. Estimates of the quantities of asbestos containing materials on site and the cost for removal are presented in Table 2. The estimated cost for removal of 900 square feet (sf) of contaminated surfacing material, 17,200 sf of contaminated thermal system insulation, and 115,000 sf of contaminated miscellaneous materials from the site is $986,500.

## CONCLUSIONS

The asbestos fireproofing, pipe insulation, ceiling tile paper and duct insulation in the main building were significantly damaged. These materials were found in various states of dilapidation throughout the heavily vandalized main building, particularly in the entryways and near windows. Asbestos inside the main building presents a significant threat to human health and the environment.

The asbestos identified in the pilot plant was in fair to good condition. However, the facility was not secured and the asbestos was exposed to the weather. In addition, friable pipe insulation that was sampled in the trench during the survey was also exposed to weather. Continued exposure could eventually lead to further degradation of the material and possibly migration of the material out of the building or trench. Asbestos materials in the pilot plant and trench could present significant threat to human health and the environment in the future.

At the request of OSC Benning, the preparation of this letter report serves as the START deliverable for the Former ARCO Refinery investigation. All tasks pertaining to this TDD have been completed. Please contact our office at (312) 424-3300 should you have any questions or require additional information.

Very truly yours,
WESTON SOLUTIONS, INC.

Ronald Bugg
START Project Manager

Attachments: A - Figures
B - Table
C - Photodocumentation

cc: Brad Benning, U.S. EPA OSC
Dean Geers, WESTON
SiteFile

ATTACHMENT A

FIGURES

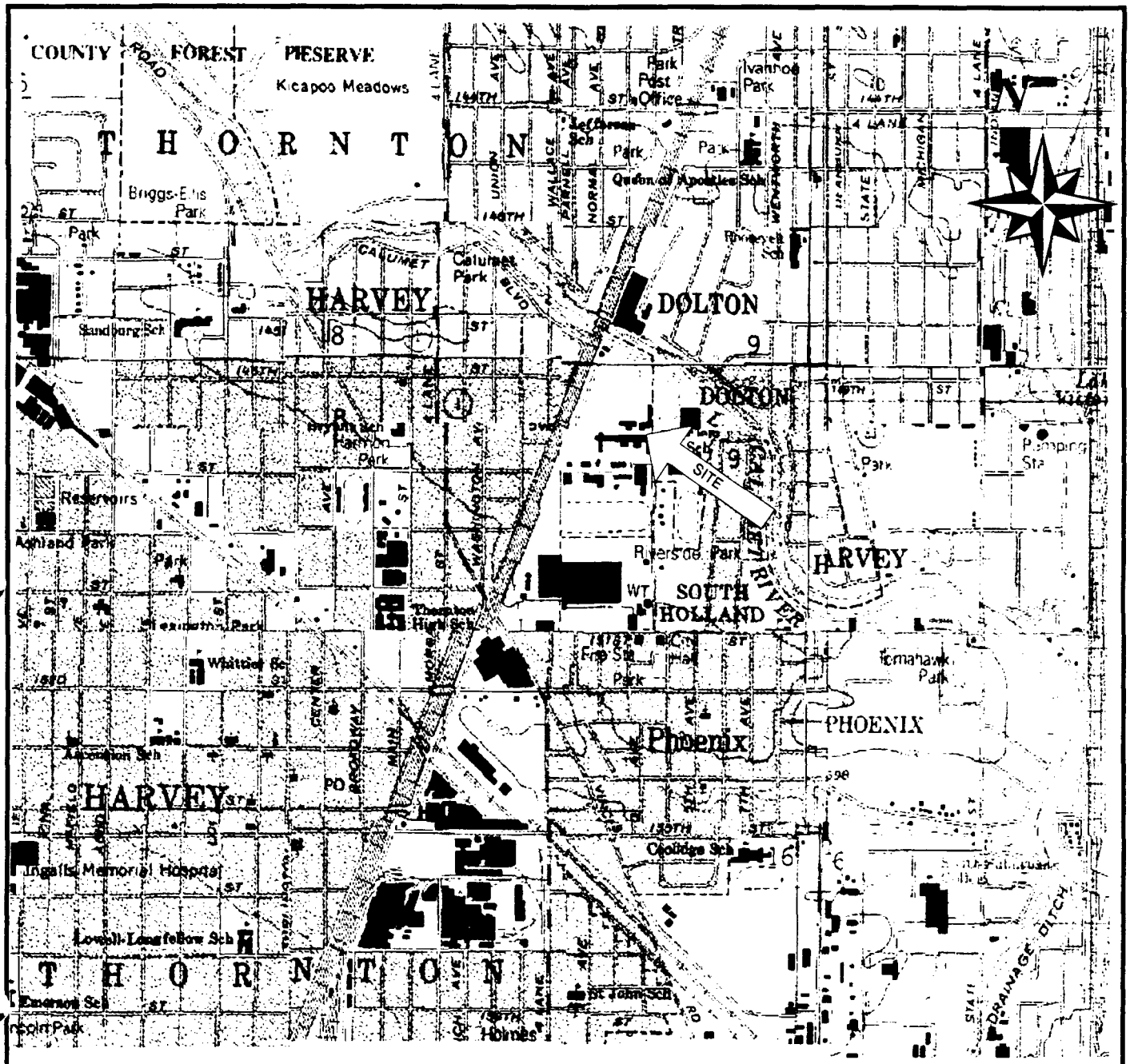



Figure 1: Topographic Site Map

Weston Solutions, Inc.
Region 5 – Superfund Technical Assessment and Response Team
3 First National Plaza, Suite 1990, Chicago IL 60602

**Map Info**

- Digital Raster Graphics (scanned topographic maps)
- Produced in 1985
- Original Projection: UTM Zone 16 NAD 27, scale 1:24,000

| | |
|---|---|
| Title: USGS Topographic Site Map | Figure: 1 |
| Site: Former ARCO Refinery and Chemical Research Facility | Scale: 1:24,000 |
| City: Harvey State: Illinois | Date: 12/27/02 |

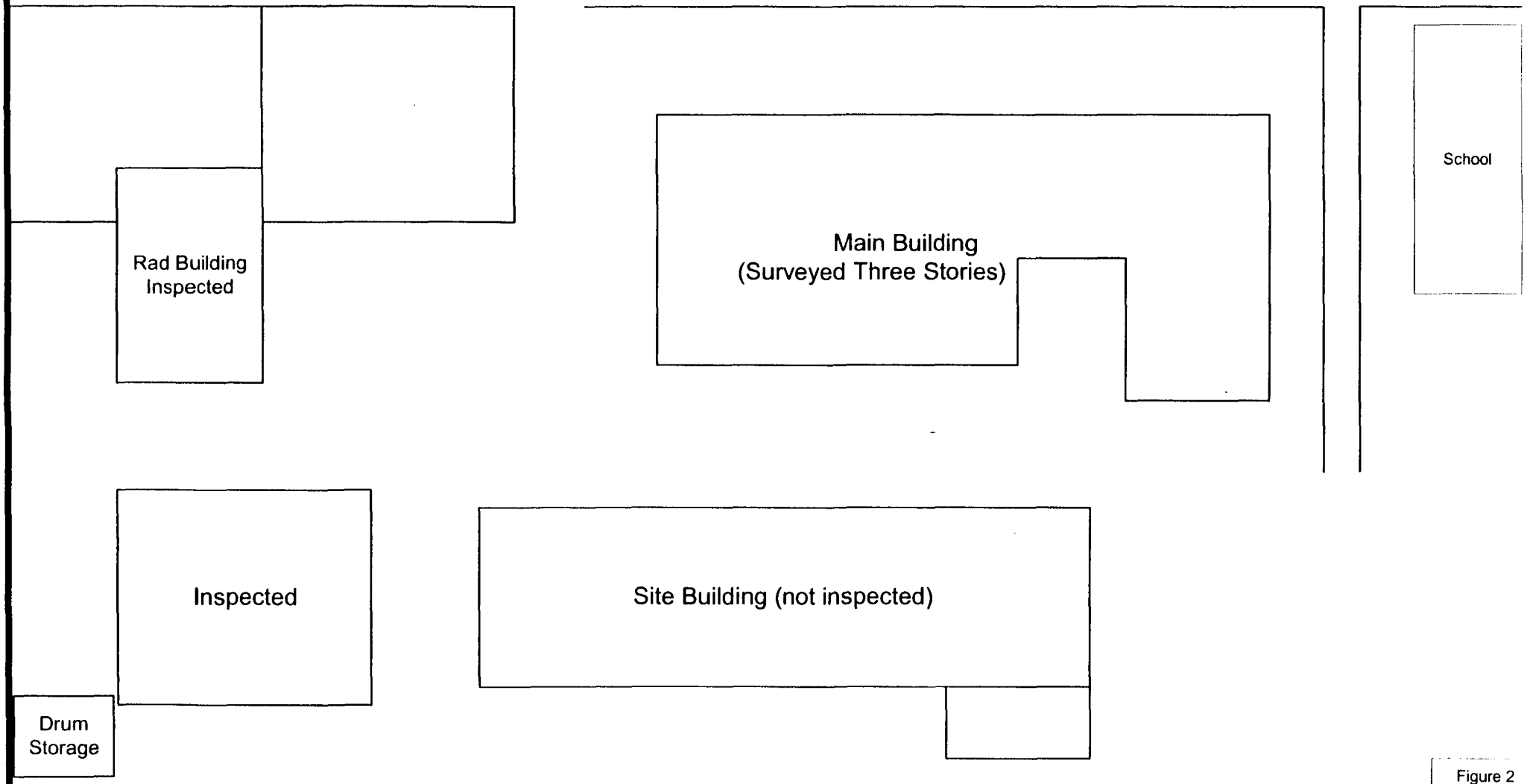



Figure 2

WESTON SOLUTIONS
Restoring Resource Efficiency

Superfund Technical Assessment
and Response Team
Contract No. 68-W-00-119
TDD No. S05-0204-007
Document Control:

**Former ARCO Refinery and Research Facility**

Site Location Map
Harvey, Cook County, Illinois

ATTACHMENT B

TABLES

# Table 1
## ARCO Research Center
## Asbestos Bulk Sample Data

| Sample ID | SACM Sampled | %Asbestos in Sample* | Type of Asbestos in Sample | Friable? Y or N |
|---|---|---|---|---|
| Samples from Incinerators Near Northwest Site Fence | | | | |
| ABS-1 | Equipment | ND | N/A | Y |
| ASB-2 | Equipment | ND | N/A | Y |
| ASB-3 | Equipment | ND | N/A | Y |
| Samples from the Pilot Plant | | | | |
| ASB-4 | Magblock Pipe Ins | 10-15 | Amosite | Y |
| ASB-5 | Magblock Pipe Ins. | 5-10 | Amosite | Y |
| ASB-6 | Tan Pipe | 5-10 | Amosite | Y |
| Sample from the Radiation Building | | | | |
| ASB-7 | Pipe Ins | ND | N/A | Y |
| Samples from the Main Building | | | | |
| ASB-8 | Pipe | 5-10 and 5-10 | Amosite and Chrysotile | Y |
| ASB-9 | Paper on Ceiling | 10-15 and 5-10 | Amosite and Chrysotile | Y |
| ASB-10 | Pipe in Café | 5-10 and 5-12 | Amosite and Chrysotile | Y |
| ASB-11 | Paper on Ceiling | N/A | N/A | Y |
| ASB-12 | Cork Duck Ins. | N/A | N/A | Y |
| ASB-13 | Fire Proofing | 15-20 | Chrysotile | Y |
| ASB-14 | Fire Proofing | N/A | N/A | Y |
| ASB-15 | Fire Proofing | N/A | N/A | Y |
| ASB-16 | Smooth Plaster | ND | N/A | N |
| ASB-17 | Fire Proofing | 15-20 | Chrysotile | Y |
| ASB-18 | Pressed Paper | ND | N/A | Y |
| ASB-19 | Door Insulation | 5-10 | Chrysotile | Y |
| ASB-20 | Ceiling Tile 2x4 | ND | N/A | Y |
| ASB-21 | Ceiling Tile 2x4 | ND | N/A | Y |
| ASB-22 | Ceiling Tile 2x4 | ND | N/A | Y |
| ASB-23 | Chiller Ins | ND | N/A | Y |
| ASB-24 | Cork Duct Ins. | 5-10 and 10-15 | Amosite and Chrysotile | Y |
| ASB-25 | Aircell Pipe Ins. | 25-30 | Chrysotile | Y |
| ASB-26 | Smooth Plaster | ND | N/A | N |
| ASB-27 | Cork Duct Ins. | N/A | N/A | Y |
| ASB-28 | Pressed Paper | 1-5 | Chrysotile | Y |
| ASB-29 | Pressed Paper | 1-5 | Chrysotile | Y |
| ASB-30 | Paper on Ceiling | N/A | N/A | Y |
| ASB-31 | Counter Top | ND | N/A | N |
| ASB-32 | 9" x 9" Floor Tile | 5-10 | Chrysotile | N |
| ASB-33 | Smooth Plaster | ND | N/A | N |
| ASB-34 | Pressed Paper | 1-5 | Chrysotile | Y |
| ASB-35 | 12" x 12" Floor Tile | ND | N/A | N |
| ASB-36 | Pipe Insulation | 25-30 | Chrysotile | Y |
| Elementary School Yard | | | | |
| ASB-37 | Soil | ND | N/A | Y |
| ASB-38 | Soil | ND | N/A | Y |
| ASB-39 | Soil | ND | N/A | Y |

Samples were shipped overnight to STAT Analytical Laboratories University Park, Illinois

* If two percentages are shown, they apply to amosite and chrysotile concentrations in the material, respectively.**

ND = Non Detect, results were below method detection level

N/A = Not Applicable, not analyzed.

# Table 2
# ARCO Research Center
# Asbestos Containing Material and Quantity Estimates

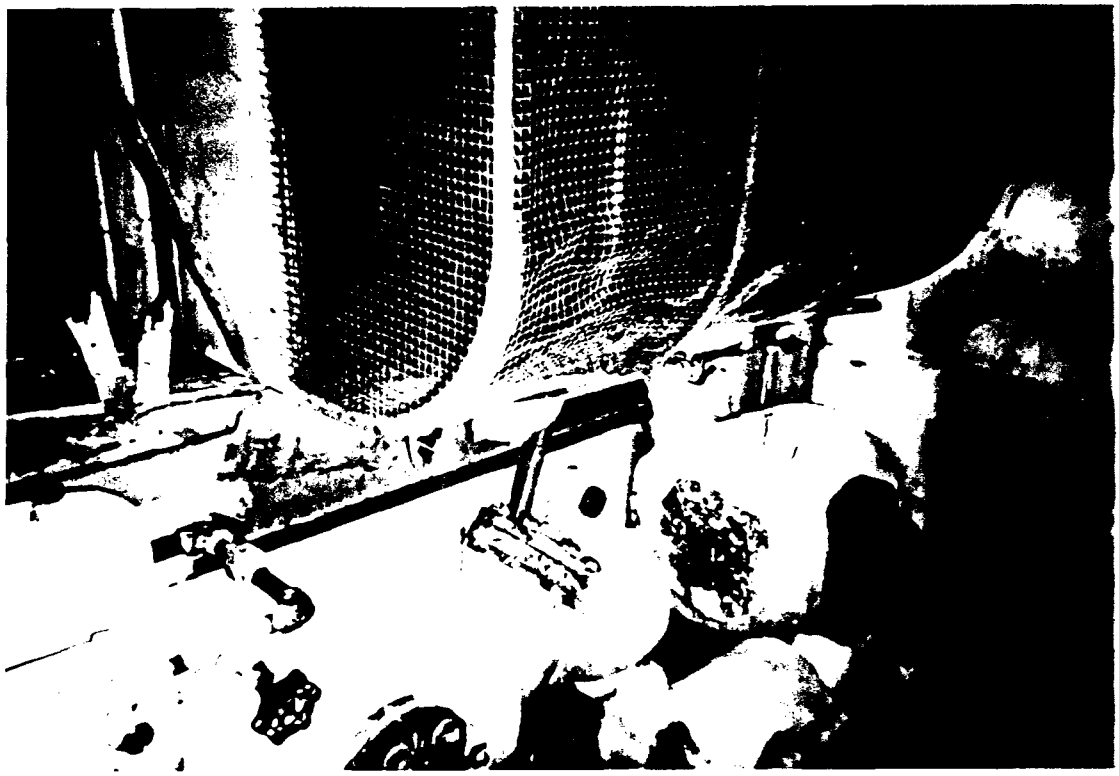
| Asbestos Containing Materials | Estimated Quantity | Cost for Removal |
|---|---|---|
| **Surfacing material:** | Total: 900 sf | Total: $24,000 |
| Fireproofing | 900 sf | $24,000 |
| | | |
| **Thermal System Insulation:** | Total: 17,200 sf | $227,500 |
| Cork Duct Insulation | 4,100 sf | $61,500 |
| Pipe Insulation | 9,100 sf | $91,000 |
| Paper Duct Insulation | 4,000 sf | $75,000 |
| | | |
| **Miscellaneous Materials :** | Total: 115,000 sf | Total: $210,000 |
| 9" x 9" Floor tile and mastic | 50,000 sf | $75,000 |
| 12" x 12" Floor tile and mastic | 40,000 sf | $60,000 |
| Paper on Ceiling | 25,000 sf | $75,000 |
| sf = square feet | | |
| Notes: Estimate does not included management oversight. Items not covered in above cost estimate include: excavation of exterior tunnel and disposal of all material as ACM. Additional cost: | | $50,000 |
| Cleaning and securing of building to allow for the abatement project: | | $300,000 |
| Lab packing or disposal of "hazardous materials" in laboratories: | | N/A |
| Pumping and filtering of water in basement/tunnel for disposal: | | $150,000 |
| Asbestos Removal in tunnel: | | $25,000 |
| Total: | | $986,500 |

ATTACHMENT C

PHOTODOCUMENTATION

Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Delimanated fire proofing and damaged pipe insulation in fan room

Date: 04/23/2002
Photographer: HS

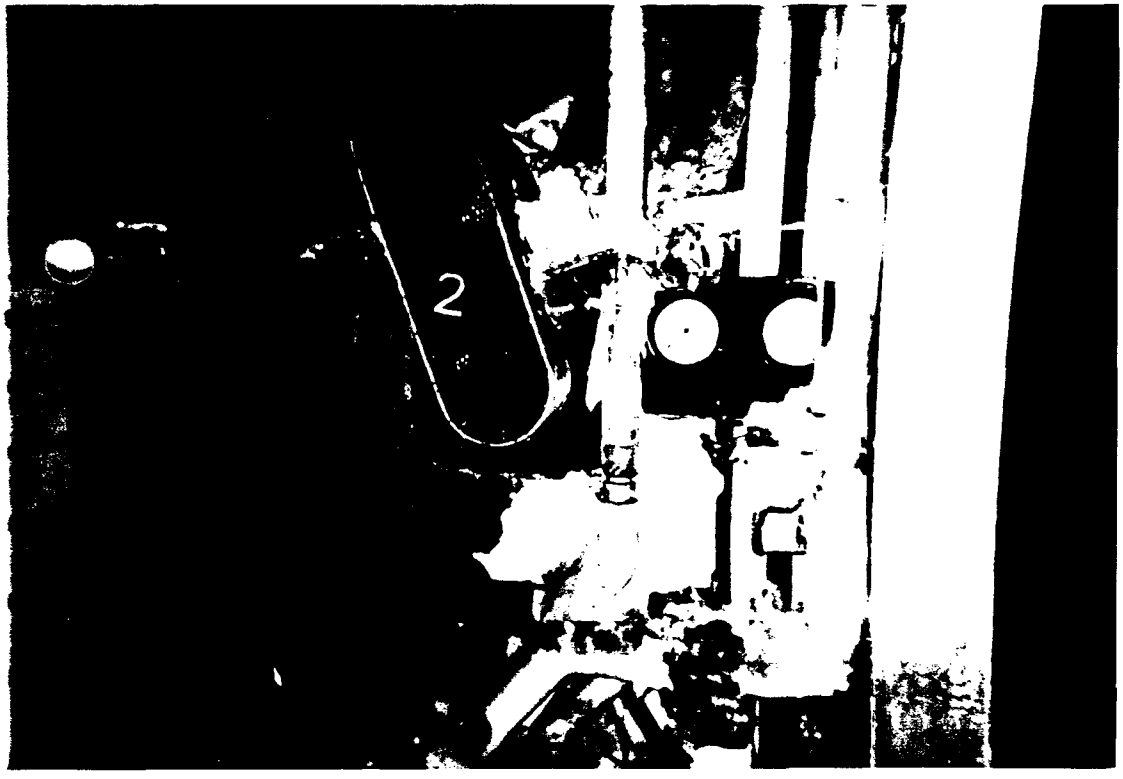


Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Damaged pipe insulation on exhaust fan at window.

Date: 04/23/2002
Photographer: HS

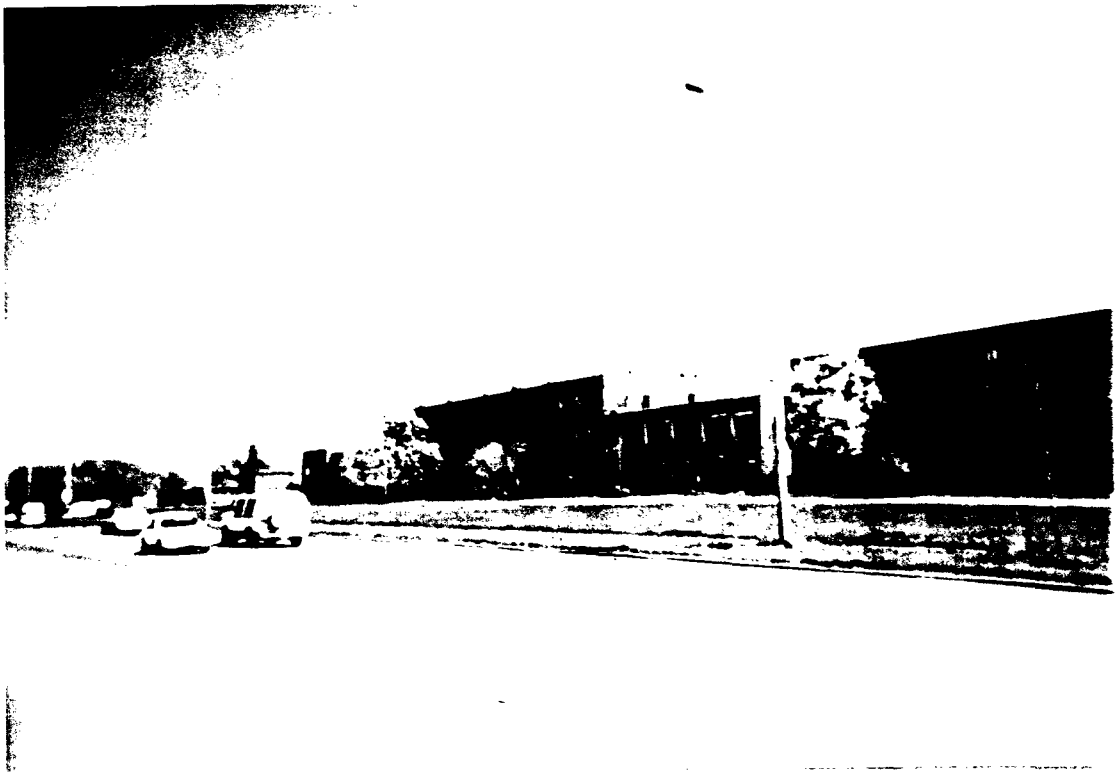
Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Center of Main building, exterior windows vandalized, damaged asbestos, pipe insulation.

Date: 04/23/2002
Photographer: RB



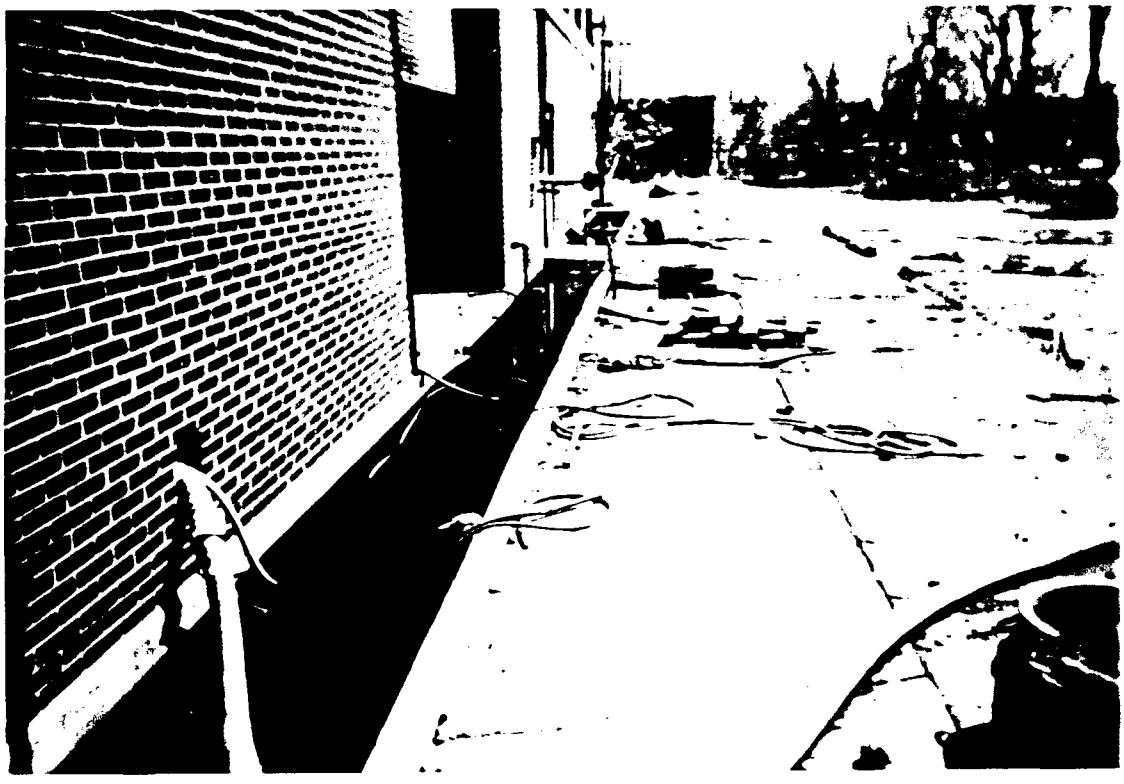

Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Damaged pipe and duct insulation at supply fan.

Date: 04/23/2002
Photographer: HS



Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Northside of Main Building looking East

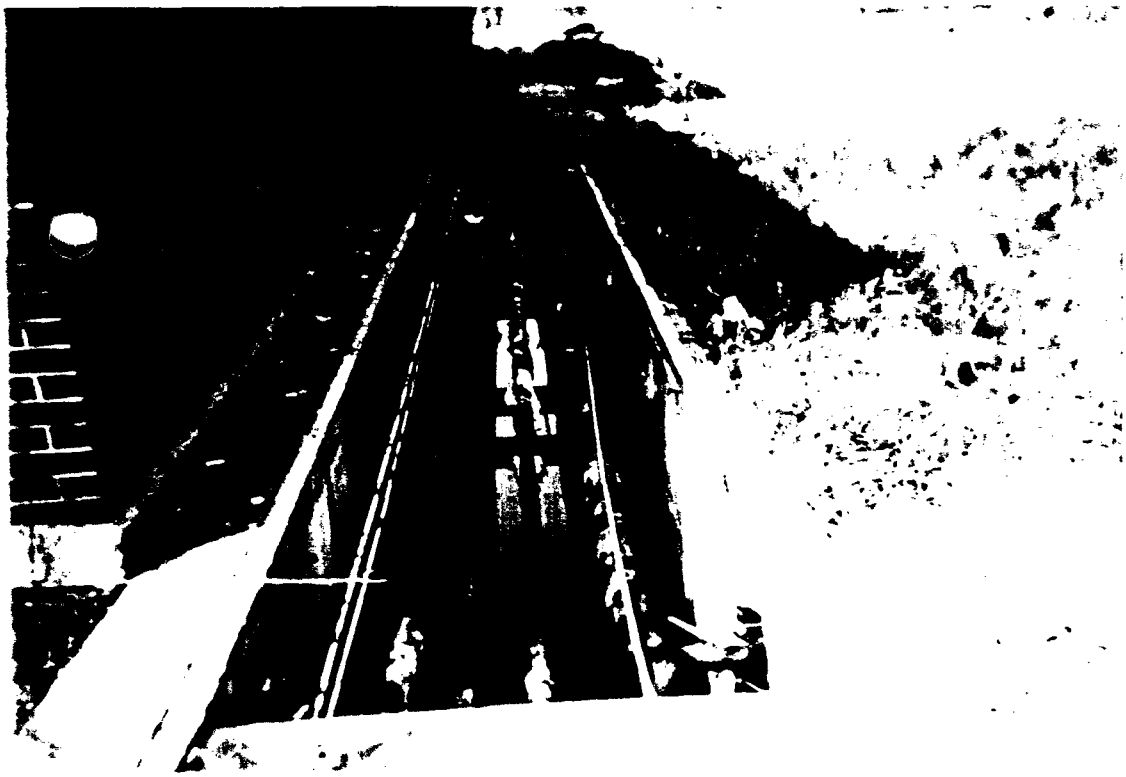
Date: 04/23/2002
Photographer: HS



Site: ARCO Research Center
W.O. #: 12634.001.001.0249
Subject: Westside of Pilot Plant, oily water in trench, stained concrete

Date: 04/23/2002
Photographer: HS

**Site:** ARCO Research Center **Date:**04/23/02
**W.O.#:** 12634.001.001.0249 **Photographer:** RWB
**Subject:** Open top drums on the southend of the property (near DrumStorage)



Site: ARCO Research Center Date: 04/23/2002
W.O. #: 12634.001.001.0249 **Photographer:** HS
Subject: Utility trench along north side of pilot plant